



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

09/920,366

08/01/2001

Steven K. Case

A48.12-0014

4271

7590

11/16/2004

Judson K. Champlin
WESTMAN CHAMPLIN & KELLY
International Centre - Suite1600
900 South Second Avenue
Minneapolis, MN 55402-3319

EXAMINER

KIM, RICHARD H

ART UNIT

PAPER NUMBER

2871

DATE MAILED: 11/16/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/920,366

Applicant(s)

CASE ET AL.

Examiner

Richard H Kim

Art Unit

2871

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 August 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-6, 8, 14, 21 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ackerman et al. (US 5,023,881) in view of Aoyagi et al. (US 5,906,753).

Referring to claims 1, 2, 14 and 21, Ackerman et al. et al. discloses a manufactured optical device and method comprising an external fixed reference (Fig. 1, ref. 11); a first optical module having a first optical component (see col. 3, lines 18-19), the first optical module mounted to a first predetermined location on the external fixed reference (see Fig. 1, ref. 11); and a second optical module having a second optical component (see Fig. 1, ref. 13), the second optical module mounted to a second predetermined location on the external fixed reference (see Fig. 1, ref. 11); wherein the first and second optical modules are oriented relative to an external reference frame provided by an external reference standard (see Fig. 1, ref. 11); and mounted at the first and second predetermined locations such that the optical components interact with one another in a desired manner (see col. 3, lines 59-63). However, the reference does not disclose that the optical components are standardized and prealigned.

Aoyagi et al. discloses an optical module having an optical component prealigned relative to an external reference frame provided by the reference standard (see col. 7, lines 28-38),

Art Unit: 2871

wherein the module carries reference features and the prealignment is with respect to the reference features (see col.7, lines 30-35).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to prealign the first and second optical modules relative to the external reference frame provided by the external reference standard, wherein the first and second optical modules carry reference features and the prealignment is with respect to the reference features in order to further provide “excellent coupling efficiency” thereby obtaining high yield (see col. 2, lines 53-59). Further, it would have been obvious to one having ordinary skill in the art at the time the invention was made to standardize the optical modules since a skilled artisan in the art would be expected to know that using devices with industry standards would be desirable to facilitate compatibility between optical devices.

Referring to claim 3, Ackerman et al. and Aoyagi et al. disclose the device previously recited. Ackerman et al. et al. further disclose that the fixed reference carries reference features at the first and second predetermined locations (see Fig. 1, ref. 11). It is the position of the examiner that the edges of the fixed reference inherently serves as reference features.

Referring to claims 4-6, Ackerman et al. and Aoyagi et al. disclose the device previously recited. However, Ackerman et al. does not disclose that the first and second optical module comprise a first and second prealignment mount; and the first and second optical component is mounted to the first and second prealignment mount, respectively, wherein the first optical component is fixed at a prealigned orientation by the first prealignment mount.

Art Unit: 2871

Aoyagi et al. discloses an optical module comprising an alignment mount, wherein an optical component is fixed at a prealigned orientation by the prealignment mount (see col. 7, lines 28-38).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the first and second optical module comprise a first and second prealignment mount; and the first and second optical component mounted to the first and second prealignment mount, respectively, wherein the optical component is fixed at a prealigned orientation by the first prealignment mount in order to further provide “excellent coupling efficiency” thereby obtaining high yield (see col. 2, lines 53-59). Further, such a modification would provide stability to the device by mounting the component on a rigid surface.

Referring to claim 8, Ackerman et al. and Aoyagi et al. disclose the device previously recited. Ackerman et al. further discloses a prealignment mount coupling adapted to fixedly couple the first optical component to the first prealignment mount at a predetermined orientation (see col. 4, lines 8-12).

Referring to claim 22, Ackerman et al. and Aoyagi et al. disclose the method previously recited. However, the references do not disclose a computer software to implement the method.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have use computer software to implement the method in order to implement the method using a computer, thereby improving the efficiency in which the method is implemented. Moreover, intended use does not carry patentable weight.

Art Unit: 2871

3. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ackerman et al. and Aoyagi et al., in view of Green et al. (US 6,470,120 B2).

Ackerman et al. and Aoyagi et al. disclose the device previously recited. However, the references do not disclose that the first optical component can move with six degrees of freedom relative to the reference features prior to being fixed to the first prealignment mount.

Green et al. discloses an optical component that can move with six degrees of freedom (see col. 4, lines 61-64).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the first optical component move with six degrees of freedom relative to the reference features prior to being fixed to the first prealignment mount in order to provide a period of adjustability before fixing the component onto the substrate, thereby insuring precision alignment. Moreover, such a modification allows "optimal coupling" (see col. 4, lines 63-64).

4. Claims 9-12 and 15-20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ackerman et al. and Aoyagi et al., in view of Setoguchi (US 6,467,972).

Referring to claim 9, Ackerman et al. and Aoyagi et al. disclose the device previously recited. However, the references do not disclose that the optical device includes a first fixed reference coupling to fixedly couple the first optical module to the fixed reference.

Setoguchi discloses a fixed reference coupling to fixedly couple a first optical module to the fixed reference (see col. 12, lines 6-18).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have a fixed reference coupling to fixedly couple a first optical module to the fixed reference in order to improve the stability of the device by securing the module with the fixed reference.

Referring to claims 10 and 11, Ackerman et al. discloses an optical device comprising a fixed reference (see Fig. 1, ref. 11); a first optical module comprising a first optical component (see col. 3, lines 18-19); a first mount (see Fig. 2, ref. 18); a first mount coupling which fixedly couples the first optical component to the first mount (see Fig. 3, ref. 29); a second optical module comprising a second optical component (see Fig. 1, ref. 13); a second mount (see Fig. 1, ref. 12); wherein the first and second optical components are oriented to optically interact with one another in a desired manner (see col. 3, lines 59-63). However, the reference does not disclose prealignment mounts; fixed reference couplings which fixedly couples the prealignment mounts to a predetermined location on the fixed reference; wherein the first prealignment mount is prealigned relative to an reference frame of a reference standard and the fixed reference coupling; a second prealignment mount coupling which fixedly couples the second optical component to the second prealignment mount at a prealigned orientation relative to the external reference frame of the external reference standard and to the fixed reference coupling, wherein the first and second optical fixed reference couplings carry reference features.

Aoyagi et al. discloses prealignment mounts (see col. 7, lines 30-37). Setoguchi discloses a mount (see Fig. 7, ref. 103); a fixed reference coupling which fixedly couples the mount to a predetermined location on the fixed reference (see Fig. 8, ref. 122); a mount coupling which fixedly couples the optical component to the mount at a prealigned orientation relative to the

Art Unit: 2871

external reference frame of the reference standard and to the fixed reference coupling (see Fig. 7, ref. 117).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to employ prealignment mounts; fixed reference couplings which fixedly couples the prealignment mounts to a predetermined location on the fixed reference; a second prealignment mount coupling which fixedly couples the second optical component to the second prealignment mount at a prealigned orientation relative to the reference frame of the reference standard and to the fixed reference coupling, wherein the first and second optical fixed reference couplings carry reference features in order to further provide "excellent coupling efficiency" between the optical components, thereby obtaining high yield (see col. 2, lines 53-59), while maintaining a high degree of stability.

Referring to claim 12, Ackerman et al., Aoyagi et al. and Setoguchi disclose the device previously recited. Ackerman et al. et al. further disclose that the fixed reference carries reference features at the first and second predetermined locations (see Fig. 1, ref. 11). It is the position of the examiner that the edges of the fixed reference inherently serves as reference features.

Referring to claims 15 and 16, Ackerman et al., Aoyagi et al. and Setoguchi disclose the method previously recited. Ackerman et al. further discloses placing an optical module at a predetermined location on a fixed reference prior to fixedly mounting (see Fig. 2, 3). However, Ackerman et al. does not disclose the method of prealigning the first and second optical modules prior to fixedly mounting.

Art Unit: 2871

Aoyagi et al. discloses prealigning an optical module prior to fixedly mounting (see col. 7, lines 30-37).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to prealign the first and second optical modules prior to fixedly mounting in order to further provide “excellent coupling efficiency” thereby obtaining high yield (see col. 2, lines 53-59), before permanently mounting the modules.

Referring to claims 17 and 18, Ackerman et al., Aoyagi et al. and Setoguchi disclose the method previously recited. However, Ackerman et al. does not disclose aligning the modules in a reference frame defined by the reference standard; and fixing the first and second optical components in prealignment mounts.

Aoyagi et al. discloses aligning the modules in a reference frame defined by a reference standard, and fixing the first and second optical components in prealignment mounts (see col. 7, lines 30-37).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to align the modules in a reference frame defined by the reference standard, and fixing the first and second optical components in prealignment mounts in order to further provide “excellent coupling efficiency” thereby obtaining high yield (see col. 2, lines 53-59) by defining a specific frame where high coupling efficiency can be achieved.

Referring to claim 19, Ackerman et al., Aoyagi et al. and Setoguchi disclose the method previously recited. However, Ackerman et al. does not disclose the method of compensating for optical variations in the optical components.

It would have been obvious to account for optical variations in the optical components in order to improve the performance of the device by compensating for future inconsistencies within the device.

Referring to claim 20, Ackerman et al., Aoyagi et al. and Setoguchi disclose the method previously recited. However, the references do not disclose a third optical module.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have a third optical module as claimed in order to increase the capabilities of the device by extending the alignment method to another optical coupling, thereby improving the coupling efficiency of a more complicated device. Moreover, it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 8.

5. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ackerman et al., Aoyagi et al., and Setoguchi et al., in view of Green et al.

Ackerman et al., Aoyagi et al. and Setoguchi et al. disclose the device previously recited. However, the references do not disclose that the first optical component can move with six degrees of freedom relative to the reference features prior to being fixed to the first prealignment mount.

Green et al. discloses an optical component that can move with six degrees of freedom (see col. 4, lines 61-64).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the first optical component move with six degrees of freedom

Art Unit: 2871

relative to the reference features prior to being fixed to the first prealignment mount in order to provide a period of adjustability before fixing the component onto the substrate, thereby insuring precision alignment. Moreover, such a modification allows "optimal coupling" (see col. 4, lines 63-64).

Response to Arguments

6. Applicant's arguments filed 12/23/03 have been fully considered but they are not persuasive.

7. In response to Applicant's argument that the references do not disclose at least three separate elements: a first standardize optical module, a second standardize optical module and a fixed reference to which these two optical modules are mounted, Examiner submits that at the reference do show such a configuration. Ackerman, the primary reference, shows a first optical module (col. 3, lines 18-19), a second optical module (fig. 1, ref. 13), and a fixed reference to which these two optical modules are mounted (fig. 1, ref. 11). The reference is the silicon body 11. Both optical components are ultimately mounted on the silicon body which provide a flat reference plane in which the optical modules are mounted on. The Aoyagi reference was incorporated to teach that prealignment of optical components are well known in the art to improve coupling efficiency.

8. In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the

Art Unit: 2871

applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971). Utilizing standardized optical components are extremely well known in the art. Optical components are well known in the art to be manufacture in mass quantities utilizing standard parameters.

Conclusion


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard H Kim whose telephone number is (571)272-2294. The examiner can normally be reached on 9:00-6:30 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert H Kim can be reached on (571)272-2293. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Richard H Kim
Examiner
Art Unit 2871

RHK


TARIFUR R. CHOWDHURY
PRIMARY EXAMINER